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LCDR Adam B. Green, USN

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The Israeli Navy's Application of Operational Art in the Yom Kippur War: A Study in Operational Design

by

Adam B. Green

LCDR   USN

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

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ABSTRACT

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"They missed," calmly uttered by Flotilla Commander Michael Barkai onboard an Israeli *Sa'ar* missile boat after Syrian missile boats fired a salvo of Soviet-made Styx missiles. Those two words broke the paralyzing silence present in the Israeli naval command pit in Tel Aviv.[1] The tactics validated groundbreaking ideas that had been more than eight years in the making.[2] The Israeli Navy, always given lowest priority behind the Army and Air Force and considered least effective of the armed services, now found itself the most prepared for battle.[3]

The Israeli Navy during the Yom Kippur War, out-ranged in missiles and outnumbered more than two to one by the Egyptian and Syrian fleets, changed naval warfare forever.[4] Featuring the first ever missile-to-missile combat and use of electronic countermeasures in naval history, the Israeli Navy transformed modern combat through its employment of new technologies.[5] But, how was Israel's hitherto weakest service, with a history of embarrassment and failure, able to attain sea control over the Mediterranean sea-lines of communication (SLOCs), its enemy's coastal waters and destroy or capture forty-four vessels without a single loss?[6] The Israeli Navy's understanding of operational art demonstrated by its development of the operational design for the 1973 Yom Kippur War led to its overwhelming success against the Arabs. The Navy's design took advantage of new technologies and doctrines, allowing Israel to specifically tailor its operations to achieve the Nation's objectives. Focusing on three elements of operational design – objectives, balancing of operational factors versus the objectives, and the operational idea – will demonstrate how the Israeli Navy's masterful acumen of operational art was responsible for its success.

Dr. Milan Vego, a professor at the U. S. Naval War College, and preeminent expert on operational art theory, defines operational design as "a loose collection of diverse elements that the naval operational commanders and his staff should consider in developing the basic plan for a maritime campaign or major naval operations."[7] Despite only having two major naval battles - Battle of Latakia and Battle of Baltim - and several commando operations, the naval actions of the Yom Kippur War were a major operation for the small country of Israel. Forced to defend against a surprise coordinated attack from Egypt and Syria, the Israeli Navy found itself ready for redemption. This analysis will examine the Navy's use of operational art through its operational design and how it enabled them to overcome an undistinguished past to become a formidable fighting force. To realize how far the Navy had come and the struggles it faced, one must be familiar with its history.

EVOLUTION OF THE ISRAELI NAVY

The Israeli Navy's comprehension and use of operational art that led to its design of the Yom Kippur War evolved from the 1956 Sinai Campaign, its failures during the Six Day War, and the threat from Soviet-made missile boats. Originally called the "Sea Service," and assigned, "all the missions of defense at sea," the Israeli Navy came into existence on March 17th, 1948.[8] Its short twenty-five-year history was marked by limited resources, lack of a clear mission, and the role of a mere bystander when compared to the incredible achievements of the Army and Air Force (Flotilla 13 withstanding - Navy commandos).[9]

When war broke out in 1956 against Egypt, a much larger and better-trained opponent, the Navy was told not to initiate any attacks in the Mediterranean due to the lack of confidence in its abilities. In fact, some of its small torpedo boats were moved to support

ground forces.[10] In contrast to the glowing victories of the Israeli Air Force and Army, the

Navy's lack of contribution did not go unrecognized and cemented the role of the Navy

among Israeli leadership as nothing more than "sideshow" to the main effort.[11] The Navy

began to formulate a new operational design after identifying change was required to be a

warfighting force.

In the late 1950s the Navy was composed of three British World War II destroyers

made up of 250 men apiece, six torpedo boats and two submarines.[12] A large force for a

small country in terms of people but not firepower. Their Egyptian and Syrian opponents,

supplied by superior Soviet technology and resources, made the Israeli Navy rethink how to

defend its coast and provide an offensive capability.[13] In 1962 the Navy began to develop its

own missile boat concept as the future operational design. A flotilla of fast missile boats

could provide offensive firepower at a low cost and redefine the Navy's role within the

Israeli Defense Force (IDF).[14]

The Six Day War in June of 1967, a surprise attack initiated by Israel against Egypt

and Syria, occurred before the Navy's new design was fully operational. Chaim Herzog,

former President of Israel and a retired Major General of the IDF, said: "The Six Day War

found the Israeli Navy with the right ideas but without the ability to apply them."[15]

Frantically developing surface-to-surface missile and electronic countermeasure technology,

none of the fourteen boats the Navy ordered from the Cherbourg shipyards were available

when war broke out. The result was a disaster. The Navy's ideas and strategy were ten years

ahead, but true capability was stuck in the 1950s. It did not achieve any successful results

when tasked with attacking five major naval targets.[16] Furthermore, the Navy's ineptitude

was most evident when it misidentified the *USS Liberty* (a collection platform) as a

combatant and ordered an Israeli Fighter to attack it. Rear Admiral Benjamin Telem, the Commander of the Israeli Navy in 1973, considered the Navy to be "at its lowest ebb, regarding usefulness" in the Six Day War.[17]

Following the Six Day War, two events occurred that changed the character of naval warfare and contributed to developing the Israeli Navy's new operational design: the sinking of the *INS Eilat* and a small fishing boat by a Styx missile.[18] The *INS Eilat,* a destroyer, was attacked off the Sinai Peninsula by two Egyptian *Komar*-class missile boats equipped with the Soviet-built SS-N-2 Styx surface-to-surface missiles. Forty-seven Sailors died and more than one hundred were wounded.[19] This event marked the lowest point in the history of the Israeli Navy.[20] Furthermore, when a Styx fired by an Egyptian missile boat sank a small fishing trawler, the Navy realized the SS-N-2 had the ability to hit small targets.[21] These events accelerated Israel's development of electronic countermeasures to nullify the 25nm range of the Soviet Styx as compared to the 12nm range of the Israeli Gabriel missile.[22] The Navy smartly took these lessons learned and expeditiously began incorporating them into its new operational design. Major General Chaim Herzog said "It [the Navy] was the single element in the IDF that prepared for the next war, without being influenced by the previous one."[23]

In 1968 Israel became the first non-Soviet supplied country to enter the missile age with the delivery of *Sa'ar* class missile boats from the Cherbourg shipyards.[24] This event marked a new beginning for the Israeli Navy, previously scarred by its lack of vision and poor performance. The Navy now had the ability to implement an operational design that had been years in the making. It used all available time to test its operational design through

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intense training and exercises, waiting for the next opportunity of redemption for past failures.[25]

THE BATTLES OF LATAKIA AND BALTIM

      Combat action began on the evening of October 6, 1973 for the Israeli Navy against the Syrians in what is known as the Battle of Latakia, the first Israeli naval battle in its history.[26] Six Israeli *Sa'ar* class missile boats led by Commander Michael Barkai, armed with Gabriel missiles and electronic countermeasures, moved north in parallel formation at maximum speed.[27] Countering their movement was a Syrian Navy with Soviet-made *Komar* and *Osa* missile boats, equipped with the Styx. This engagement marked the first test of Israel's newly developed weapon systems and tactics in combat.[28] The result was incredible. In the first ever missile-to-missile naval battle in history, five Syrian vessels were sunk or destroyed with zero losses for Israel. The encounter rendered the Syrian Navy a non-factor for the remainder of the war.[29]

      The following evening, after returning to Haifa to refuel and rearm, the flotilla headed southwest with eight missile boats to take on the Egyptian Navy in the Battle of Baltim. Shortly before midnight, the *Sa'ars* picked up four *Osas* on their radar scopes. Inspired by a new confidence in their tactics and technology, six *Sa'ars* (two had returned for fuel) went in hot pursuit. The results were once again completely one-sided. Israel sank or destroyed three of four Egyptian *Osa* missile boats, without suffering any losses.[30] The never before used electronic countermeasure technology had nullified the longer range of the Styx and validated an operational design that took years of development.[31]

The Yom Kippur War came at the perfect time for the Israeli Navy. New technology was in place, crews had been trained, and tactics were developed to defeat the enemy.[32] Not burdened by past glories like the Air Force and Army, the Navy was the one service fully prepared for combat when the Egyptians and Syrians launched their surprise attack on the day of Yom Kippur. The Navy's success during the war was not a fluke, but rather the effective use of operational art through its design created years before. The Navy comprehended the operational factors of space, time, and force, and procured the required technology to counter the threat. It was slow to become a formidable force, but its application of operational art and understanding of how its mission fit within the IDF was the cornerstone of the Navy's dramatic change.

EVOLUTION OF ISRAELI OPERATIONAL ART

Modern Israel had been a nation at war since its creation in 1948. From Israel's fight to maintain existence grew several principles of warfare that shaped its art of war. First, because of Israel's size and location, it could never endure a high number of casualties or give up any substantial amount of territory; it could only lose decisively and never overwhelmingly win. Constrained politically by world powers, any significant Israeli expansion would quickly be squashed. Its small population and contentious borders forced Israel to prioritize defending strategic positions while limiting severe damage or high causalities.[33]

Secondly, before the Six Day War in 1967, Israel lacked strategic depth, leaving it a minuscule amount of time to call up reserves to help defend from attack. Not wanting a prolonged war against a well-supplied threat, Israel adopted a quick strike offensive mindset,

knowing that waiting to be attacked would be suicide. A long war of attrition would result in strategic defeat.[34]

Finally, given Israel's geographic location, it was often forced to fight on multiple fronts simultaneously against a numerically superior enemy with scant notice. The uncertainty of where and when an attack was coming drove Israeli leadership to adopt and value mission command, knowing that any significant reliance on centralized command and control would be almost impossible.[35] Charles Wingate, a great British soldier in WWII and advisor to the IDF, was known for his "emphasis on daring thrusts, on night combat, on the indirect approach, on aggressively taking the war to the enemy, and on guerilla warfare."[36] These tenets of warfighting were ingrained into Israel's concept of operational art and responsible for many of the operational ideas used to shape the armed services.[37]

Israel's evolution of operational art, founded on its balancing of operational factors, served as the backstop for the Navy's operational design during the Yom Kippur War. The result of its clever design was a dominant victory against a larger opponent. Analyzing specific elements of the Navy's design and use of operational art will yield lessons learned that can still be implemented today.

The Ultimate Objectives of Yom Kippur

Israel has taken the initiative in every war it has fought since it was carved out of British Palestine in 1948. The Yom Kippur War was different. The Egyptians and Syrians put Israel on its heels by achieving strategic surprise.[38] The surprise attack required Israel to make its primary strategic objective protection of the homeland. Operationally, its objective was to maintain the territory captured during the Six Day War which included the Golan

Heights and Sinai Peninsula.[39] These territories, tactically valuable and rich in resources,

added a layer of defense to the homeland and provided time to activate the ready reserve,

Israel's true source of combat power.[40]

The Israeli Navy, the one service not taken by surprise and ready to fight, had been

preparing for such an attack for more than three years. Played out thousands of times in its

Sa'ar class simulator and war gamed relentlessly by leadership, the Navy's operational

objectives were established before the rest of the IDF could even figure out what was

happening.[41] The Mediterranean Flotilla fleet's operational objectives were to provide

coastal defense, eliminate Egypt's and Syria's missile boat threat, and add support to troops

fighting on the Sinai and Syrian fronts. Naval operations in the Red Sea, consisting only of

small boats and Commandos from Flotilla 13, had primary objectives to delay, disrupt, and

prevent any Egyptian troop reinforcements attempting to cross the Suez Canal. Furthermore,

Flotilla 13 was responsible for defending the valuable oil fields at Abu Rhodei.[42] In both

areas of operations, the Mediterranean and the Red Sea, the Navy was in charge of protecting

valuable sea lines of communication on which Israel relied. This included routes to Haifa in

the north and Eilat in the south.

The Israeli Navy's operational design realistically accounted for its auxiliary role

within the IDF. Israel's greatest strengths were its Army and Air Force. The Navy, given its

size and capabilities, could not significantly affect the overall outcome of the war.[43]

However, understanding the fundamentals of operational art, the Navy's operational and

tactical objectives did focus on the Egyptian and Syrian Navies' center of gravities or more

commonly understood, their great sources of strength, the missile boat. The Soviet-made

Komar and *Osa* missile boats equipped with the Styx posed the biggest danger to both the

Israeli fleet and the vital merchant shipping the country relied on for sustainment.

Furthermore, the Navy's objectives were nested within the overall framework of the war.

To meet its objectives, the Navy would have to put into action an operational design for which it had been training. Now was the time for that design to face the test of combat. An element of the Navy's design hinged upon its ability to balance the operational factors of space, time and force properly against the objectives. An analysis of these operational factors versus the objectives will show how the Israeli Navy's comprehension of operational art not only contributed to its overwhelming success during the Yom Kippur War, but vaulted it years ahead of the rest of the world in technology and doctrine.

Balancing Operational Factors vs. Objectives

Often the most complicated step of planning an operation, according to Dr. Milan Vego, is balancing the factors of space, time and force. Doing it properly can be the difference between winning or losing in battle.[44] Specifically, for naval warfare, the factors should be balanced in a manner to maximize freedom for commanders to make decisions that align with the overall objectives.[45] The Israeli Navy, knowing the Egyptian and Syrian capabilities, were finally prepared in 1973 to put its ideas to action and prove itself to the IDF and the Nation.

Space

The Israeli Navy's balancing of the factor of space was a tremendous challenge after the Six Day War. While Israel was still celebrating its crushing victory in June 1967, the Navy realized it was suddenly responsible for defending three times more coastline, to

Figure 1: Israel post Six Day War, June 1967

include the 110-mile Suez Canal.[46] Furthermore, seventy percent of the Israeli population,

containing the majority of its industrial infrastructure, was vulnerable to attack from naval

gunfire.[47] The port of Haifa on the Mediterranean coast and Eilat to the south were the only

two naval bases Israel had available. (See Figure 1) Two destroyers could not conduct the

tasks assigned to the Navy.

Naval leaders analyzed the space and decided the Navy's primary operating area would be almost exclusively in the littorals.[48] Limiting their operational design to that environment drove ship architecture, tactics, and supported their objectives of protecting the SLOCs and defending the coast. By staying in the littorals, Israel was able to support itself with short interior lines of operation, allowing for quick resupply and rearming. Following the Battle of Latakia against Syria, the missile boat flotilla returned to an awaiting NASCAR-like pit crew in Haifa, ready to refuel and rearm the *Sa'ars*.[49] The Navy's sustainment system acted as a force multiplier, making a small fleet of fourteen ships feel like twenty-four, allowing it to be ready for action the following evening in the Battle of Baltim.

The U.S. and the Soviet Union each had a strategic investment in the outcome of the war.[50] In spite of this, the Israeli Navy did not assume America would bail it out of trouble.[51] This assumption cultivated an attitude of pride, professionalism, and responsibility within Israel. For the Navy, this meant fighting its fight, developing its technology, conducting its training, and formulating its doctrine. Israel was in complete contrast to the Egyptians and Syrians, who both relied completely on Soviet equipment, training and doctrine for their armed services.[52] This advantage bought the Israeli Navy freedom to design a system that was best suited for its needs. The disadvantage was isolation and an uncertain timeline on when its few allies would be willing to step in and offer assistance.

Time

The Israeli Navy manipulated the highly dynamic nature of time through their operational design more productively than the Arabs. The Navy's use of time for accomplishing the objectives allowed it to overcome the expansive space it was responsible

for defending. [53] Time was a factor the Navy wanted to take away from its enemies. It was weighed into every decision the Navy made and technology it developed. Israel's location of naval bases, maneuverability of vessels, and tactics for employing the Gabriel missile were all designed to take advantage of the factor of time. Furthermore, by immediately going on the offensive, the Navy adhered to a naval warfighting cornerstone that noted maritime theorist Wayne P. Hughes Jr. formulated in his book, *Fleet Tactics and Costal Combat*, "Attack effectively First." [54]

The Israeli Navy effectively used long term planning and technology development to achieve quick, decisive victories. When the Navy conceived its missile boat concept, no boat in the west existed that could meet its requirements. [55] In 1968, after five years of work at the Cherbourg Shipyards, Israel had its first ever indigenously designed boat specifically crafted for its mission. [56] Simultaneously, recognizing the threat the Soviet Styx missile posed to its SLOCs and coastal defense, the Navy began developing its own version of a surface-to-surface missile in the early 1960s called the "Lux" and later renamed "Gabriel." [57] In 1970, the Navy completed a *Sa'ar* class simulator that it could use to train crews, test tactics and practice war. [58] Israel, a country always on alert, used all available time to prepare for its next battle. Unfortunately, the *Sa'ar* class missile boat with the Gabriel was not completed in time to be utilized in June 1967, but it came just at the right moment for the Yom Kippur War of 1973. [59]

The Battle of Latakia serves as an excellent example of Israel's effective use of time to achieve quick, decisive results. The Navy recognized after the surprise attack on October 6th that the Syrian Navy posed the greatest threat to Israeli ports. Not wasting a moment and already armed and fueled for war, the Navy set off to the north at a ferocious speed of thirty

knots with the objective of destroying the Syrian *Komar* and *Osa* missile boats.[60] A study

later done by the Syrian War College assessed the Navy had been planning the attack for

more than two days based on the Israelis' firepower and aggressiveness.[61] The decisiveness

of the Battle of Latakia relegated the Syrian Navy to remaining in the protection of its

harbors the remainder of the war and never again being a factor.[62]

Force

The Israeli naval force was centered around the fast and highly maneuverable *Sa'ar*

class missile boat. Armed with Gabriel missiles, a 76mm gun, and featuring electronic

countermeasures for self-defense, the *Sa'ar* brought a spirit of ownership and pride to Israel.

For the first time, the Navy had an offensive capability it could provide the IDF. The

development of its operational design around the missile boat reinvented the Israeli Navy and

was responsible for its overwhelming victories in the Yom Kippur War. Additionally, its

employment of new technologies forever changed the landscape of naval warfare.

The qualities to be an effective missile boat Captain no longer followed the historical

paths of naval warfare. Now controlling the electromagnetic spectrum and interpreting

sensors mattered as much as seamanship in the heat of battle.[63] Endless hours of training

were required to master the skills necessary for maximizing the capabilities of the *Sa'ar*

missile boat. Israel's new and unconventional approach to surface warfare led to a unique

philosophy on discipline. The Captain excluded, all Sailors worked on a first name basis and

valued personal initiative and involvement over traditional protocol.[64] Furthermore, every

Sailor was capable of performing his Shipmate's job, giving a tremendous amount of

flexibility and depth to its force.

A known shortcoming before the war was the limited effective range of the Gabriel. Termed the "missile belt," a region in which the Soviet Styx could reach but a Gabriel could not, was a problem the Israelis had to solve.[65] Their solution was electronic countermeasures in the form of chaff rockets combined with maneuverability; together they would create an "electronic umbrella" for protection.[66] Taking advantage of the active seeker on the Styx, the Israeli Navy could traverse the missile belt with its faster *Sa'ar* boats and use of chaff to get within firing range for the Gabriel.[67] The technology to accomplish this, along with the tactics to execute, had never been done before. Therefore, on the night of October 6th when Commander Barkai said the words, "they missed," it not only validated a tactic, but also the technology, and, most importantly, an operational design that the Navy had hedged all of its future on.

The Israeli Navy understood the operational factors of space, time, force, and was able to harmonize them effectively. Its recognition of the relationships between the factors, demonstrated by its distribution of forces, development of technology, and warfighting principles to accomplish the objectives, was remarkable. Time was needed to make a radical change in the Navy's culture and reputation. Fortunately, a simple operational idea after a surprise attack, grown from an already established operational design, marked the opportunity the Navy desired.

Operational Idea

The operational idea for the Navy during the Yom Kippur War was clear, concise and leveraged on the operational art it had theorized over the last ten years. The Israeli Navy's idea was centered on the *Sa'ar* class missile boats in the Mediterranean and Frogmen

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commandos from Flotilla 13 in the Red Sea and Suez Canal. Using boldness, flexibility, and speed, the Navy set out to protect the nation's SLOCs and defend its coastline by eliminating the Syrian and Egyptian naval threats. Furthermore, the Navy provided backing to troops on the ground through commando raids and naval gunfire support.[68] Admiral Telem, from his command bunker in at General Headquarters in Tel Aviv, was the officer responsible for providing his forces the clear concept of operations.[69] His operational idea harnessed the Navy's new technology, doctrine, and inspired confidence among the force.

More specifically, Admiral Telem provided his forces with well-defined sectors of effort, tactical maneuverability and the means to concentrate force. His employment of mission command allowed the Flotilla Commanders to masterfully exploit Israel's advantage of speed and electronic warfare for offensive operations while still giving protection to the homeland. For example, at the outbreak of war, all of the *Sa'ar* class missile boats were in the Mediterranean because the Navy had not yet divided their forces between Haifa and Eilat.[70] Israel overcame this deficiency by effectively using force concentration in the Mediterranean and small boat commando operations in the Red Sea.[71] All of these characteristics of the operational idea maximized the Navy's freedom of movement, flexibility, and effectiveness. It was aligned with what Dr. Milan Vego describes as, "presenting the enemy with multiple threats that he cannot successfully encounter."[72]

Lastly, the effective use of sequencing, pausing and at times momentum helped the Navy balance the factors of space and force. Israel smartly sequenced its attacks on Syria and then Egypt, taking advantage of the Arabs lack of coordination.[73] The Navy's overwhelming success against the Syrians allowed it to accelerate operations and attack the Egyptians the following night.[74] Once the Egyptian and Syrian missile boat threat was

eliminated, the Navy adroitly used small operational pauses to expand its mission sets to better support the rest of the war..[75] The flexibility inherent in the Navy's operational idea and ability to react quickly to changing circumstances contributed to its dominance at sea. For the first time in its history, the Navy was able to carry its own weight and influence the overall outcome of the war. Its surprising success led the IDF Chief of Staff Lieutenant General David Elazar to say "let me tell you, this Navy- is contributing to the decision!".[76]

CONCLUSIONS and LESSONS LEARNED

Anthony H. Cordesman, who holds the Arleigh A. Burke Chair in Strategy at the Center for Strategic and International Studies, summarizes the Yom Kippur War best: "Israel's success occurred because it had a superior overall balance of operational capabilities throughout its force structure…."[77] The Navy's understanding of operational art, demonstrated by its development of the operational design for the 1973 Yom Kippur War, led to its overwhelming success against the Arabs. Its clear objectives, balancing of operational factors versus the objectives, and its straightforward and flexible operational idea, provides an example of how overwhelming a force can be when operational art is done well.

The Israeli victories in the naval battles of the Yom Kippur War were only a surprise to people outside of the Navy. Naval leadership expertly brought together elements of operational art to form a clear, concise and executable plan. Missile boat design, surface-to-surface missile development, and the application of electronic countermeasures were all byproducts created from Israel's operational design. The intangible factors of leadership, determination, and national will supplied the Navy the means for overcoming its uninspiring

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past. Additionally, the Navy ensured the operational design was understood throughout all levels of its organization. This facilitated a unity of effort and resulted in dominant victories at sea.

Properly designing a force to meet operational objectives, rigorous training, development of new technology and great leadership are all lessons learned that still apply today. The Israeli Navy, a small force with a keen understanding of operational art and a will to fight, was able to destroy a much larger force with superior technology. It overcame a history of failure and decisively defeated an opponent with more resources and firepower. The Navy's willingness to create an operational design suited for its own objectives redefined modern naval warfare and serves as an example of what the effective application of operational art can accomplish.

When Commander Michael Barakai first addressed his Flotilla as "Fighters of the Fleet" at his change of command ceremony in May of 1973, six months before the War, it was met with laughter.[78] The term "Fighters" was only reserved for the Commandos of the Navy, the community within the Navy with a rich history of warfighting success. The Israeli Navy's performance in the Yom Kippur war, made possible by its operational design, changed its culture. At a celebration party weeks after the war was over, Commander Barakai addressed his Flotilla once again as "Fighters of the Fleet." This time no one was laughing.[79]

NOTES

[1] Abraham Rabinovich, *The Boats of Cherbourg* (New York: Seaver Books, 1988) 218-219.

[2] Rabinovich, *The Boats of Cherbourg*, 21.

[3] Trevor N. Dupuy, *Elusive Victory, The Arab-Israeli Wars, 1947-1974* (New York: Harper & Row, 1978) 349.

[4] Zeev Almog, "Israeli Naval Power: An Essential Factor in the Operational Battlefield," *Military and Strategic Affairs* Vol 3, No. 1 (May 2011): 29-43.

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[6] Moshe Tzalel, *From Ice-Breaker to Missile Boat: The Evolution of Israel's Naval Strategy* (Westport, CT: Greenwood Press, 2000) 55; Almog, "Israeli Naval Power," 29-43.

[7] Milan Vego, *Operational Warfare at Sea: Theory and Practice* (New York: Routledge, 2009) 119.

[8] Tzalel, *From Ice-Breaker to Missile Boat: The Evolution of Israel's Naval Strategy,* 3.

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[12] Rabinovich, *The Boats of Cherbourg*, 26.

[13] Ibid., 26.

[14] Rabinovich, *The Boats of Cherbourg*, 27.; Dupuy, *Elusive Victory, The Arab-Israeli Wars, 1947-1974,* 327.

[15] Chaim Herzog, *The War of Atonement, October, 1973* (Boston: Little Brown and Company, 1975) 261.

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[18] Zakheim, "The United States Navy and Israeli Navy," 5.

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[23] Herzog, *The War of Atonement, October, 1973,* 262.

[24] Rabinovich, *The Boats of Cherbourg*, 65.; Ibid., 73.

[25] Ibid., 198-199.

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[42] Ibid., 245.

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